

**TOWN OF SHREWSBURY  
CONTRIBUTORY RETIREMENT SYSTEM**

Actuarial Valuation Report

January 1, 2004

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## Report Summary:

<u>Highlights</u>	<u>January 1, 2002</u>	<u>January 1, 2004</u>
<u>Contributions</u>		
Funding Schedule FY 2005	\$1,601,000	\$1,601,000
Funding Schedule FY 2006	1,653,000	2,193,087
<u>Funded Ratios</u>		
GAS No. 25	78.9%	77.9%
<u>Participants</u>		
Actives	587	578
Inactives	166	156
Retirees and Beneficiaries	209	197
Disabilities	<u>29</u>	<u>30</u>
Total	991	961
<u>Payroll</u>		
Payroll of Active Members	\$16,773,825	\$17,995,844
Average Payroll	28,576	31,135
<u>Normal Cost</u>		
Employer	490,268	815,008
Employee	1,337,432	1,446,304
Administrative Expenses	<u>75,000</u>	<u>100,000</u>
Total	1,902,700	2,361,312
<u>Actuarial Accrued Liabilities</u>		
Actives	32,140,720	36,686,777
Retirees, Beneficiaries, Disabilities and Inactives	<u>27,172,003</u>	<u>28,589,775</u>
Total	59,312,723	65,276,552
<u>Actuarial Value of Assets</u>	<u>46,779,157</u>	<u>50,857,118</u>
<u>Unfunded Actuarial Accrued Liabilities</u>	\$12,533,566	\$14,419,434

## **Introduction**

This report presents the Town of Shrewsbury actuarial valuation findings as of January 1, 2004, under the Commonwealth of Massachusetts Retirement System.

The actuarial valuation is based on:

- Provisions Chapter 32 of the Massachusetts General Laws, "M.G.L", as of January 1, 2004.
- Employee data provided by the Retirement Board
- Asset information reported to the Public Employee Retirement Administration Commission by the Town of Shrewsbury Contributory Retirement System
- Actuarial assumptions approved by the Retirement Board

The valuation and appropriation forecast are prepared in accordance with Chapter 32 of the M.G.L. as of January 1, 2004.

The valuation and forecast do not account for:

- Any subsequent changes in the law
- Chapter 32 of the M.G.L., Section 3(8)(c) transfers between systems
- State-mandated benefits
- Cost-of-living increases granted to retired members between 1982 and 1997. The cost of these benefits has been assumed by the State under Proposition Two and One-Half.

**Actuarial Experience**

In performing the actuarial valuation, various assumptions are made regarding such factors as mortality, retirement, disability, and withdrawal rates as well as both payroll, salary increases, and investment returns. A comparison of the current valuation and the prior valuation is made to determine how closely actual experience corresponded to anticipated occurrences. This analysis of the system provides insight into the overall quality of the actuarial assumptions and helps explain any change in the annual appropriation.

During the year, the total unfunded actuarial accrued liability increased by 15.04% to \$14,419,434. The increase is the result of net unfavorable actuarial experience during the preceding years. The primary component of the unfavorable experience was an investment return less than the 8.5% assumption resulting in a loss of about three million dollars. This was partially offset by a large employer contribution.

## Actuarial Costs and Liabilities:

### Normal Costs

The normal cost is the sum of the individual normal costs determined for each member as if the assumptions underlying the cost determinations had been exactly realized. An individual normal cost represents that part of the cost of a member's future benefits which are assigned to the current year as if the costs are to remain level as a percentage of the member's pay. Benefits payable under all circumstances (i.e., retirement, death, disability, and terminations) are included in this calculation. Anticipated employee contributions to be made during the year are subtracted from the total normal cost to determine employer normal cost. The total normal cost is divided by total payroll to determine the normal cost as a percent of pay. The normal cost is shown in Table I.

**Table I**

	<u>January 1, 2002</u>	<u>January 1, 2004</u>
Superannuation	\$1,334,335	\$1,565,312
Death	72,534	109,989
Disability	240,318	337,195
Terminations	180,513	248,816
Administrative Expenses	<u>75,000</u>	<u>100,000</u>
Total Normal Cost	1,902,700	2,361,312
% of Pay	11.3%	13.1%
Employee Contributions	1,337,432	1,446,304
% of Pay	8.0%	8.0%
Employer Normal Cost	\$565,268	\$915,008
% of Pay	3.4%	5.1%

**Present Value of Actuarial Accrued Liabilities**

The actuarial accrued liabilities (AAL) represents today's value of all benefits earned by the actives and inactive. The AAL can be compared to the assets to determine the funded status of the Plan. The value of these earned benefits is shown in Table II below.

**Table II**

	<u>January 1, 2002</u>	<u>January 1, 2004</u>
Actives		
Superannuations	\$28,874,244	\$34,492,006
Death	822,421	956,592
Disability	2,492,590	1,944,190
Terminations	(48,535)	(706,011)
Retirees and Inactives		
Retirees	21,246,227	21,658,466
Disabled Retirees	5,482,718	6,376,605
Inactives	<u>443,058</u>	<u>554,704</u>
Total	\$59,312,723	\$65,276,552

### **Present Value of Future Benefits**

The present value of future benefits represents today's value of all benefits earned by the inactivees as well as all benefits earned and expected to be earned in the coming years by the activees. The difference between the present value of future benefits and the present value of actuarial accrued liabilities is the value of benefits to be earned in the coming years. The value of the total expected benefits is shown in Table III.

**Table III**

	<u>January 1, 2002</u>	<u>January 1, 2004</u>
Activees		
Superannuation	\$42,001,805	\$48,805,185
Death	1,550,205	1,954,789
Disability	5,146,100	4,919,987
Terminations	1,728,227	1,727,897
Retirees and Inactivees		
Retirees	21,246,227	21,658,466
Disabled Retirees	5,482,718	6,376,605
Inactivees	<u>443,058</u>	<u>554,704</u>
Total	\$77,598,340	\$85,997,633

## Funded Status and Appropriations:

### Market Value of Plan Assets

The trust fund composition on a market value basis is shown in Table IV.

**Table IV**

	<u>January 1, 2002</u>	<u>January 1, 2004</u>
Cash equivalents	\$170,710	\$495,103
Short term investments	504,581	1,318,154
Fixed income securities	14,817,591	14,595,952
Equities	23,608,898	27,419,126
International	1,151,092	0
Real Estate	2,242,594	2,760,315
Venture Capital	0	0
Other	0	0
Accounts receivable	190,563	153,661
Accounts payable	(360,171)	(344,044)
Accrued income	<u>200,648</u>	<u>796</u>
Total Market Value	\$42,526,506	\$46,399,064
Total Actuarial Value	\$46,779,157	\$50,857,118

**Actuarial Value of Assets**

The actuarial value of assets is determined by projecting the market value of assets as of the beginning of the prior plan year with the assumed rate of return during that year (8.5%) and accounting for deposits and disbursements with interest at the assumed rate of return. An adjustment is then applied to recognize the difference between the actual investment return and expected return over a five year period. This preliminary actuarial value is not allowed to differ from the market value of assets by more than 10%. The calculation of the actuarial value of assets as of January 1, 2004 is presented in Table V.

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	<u>January 1, 2004</u>
(1) Market value at January 1, 2003	\$39,140,916
(2) 2003 Contributions	\$3,966,699
(3) 2003 Payments	(\$4,077,269)
(4) Net interest adjustment at 8.5% on (1), (2), and (3) to December 31, 2003	\$3,322,279
(5) Expected market value on January 1, 2004	\$42,352,624
(1) + (2) + (3) + (4)	
(6) Actual market value on January 1, 2004	\$46,399,064
(7) 2003 (Gain) / Loss	(\$4,046,440)
(8) 80% of 2003 (Gain) / Loss	(\$3,237,152)
(9) 2002 (Gain) / Loss	\$6,514,289
(10) 60% of 2002 (Gain) / Loss	\$3,908,573
(11) 2001 (Gain) / Loss	\$6,382,283
(12) 40% of 2001 (Gain) / Loss	\$2,552,913
(13) 2000 (Gain) / Loss	\$6,168,600
(14) 20% of 2000 (Gain) / Loss	\$1,233,720
(15) Actuarial value on January 1, 2004, (6) + (8) + (10) + (12) + (14)	\$50,857,118
(16) but not less than 90% nor greater than 110% of (6)	\$50,857,118
Ratio of actuarial value to market value	109.61%

## **Unfunded Actuarial Accrued Liabilities**

Under the Entry Age Normal Actuarial Cost Method, the Actuarial Accrued Liability represents what the accumulated assets would have been as of the valuation date if:

- current plan provisions and assumptions had always been in effect,
- experience conformed exactly to assumptions, and
- the normal cost had been contributed each year since inception.

The actuarial value of the Fund's assets as of the end of the prior year are subtracted from the Actuarial Accrued Liability (AAL) to determine the Unfunded Actuarial Accrued Liability (UAAL) as of the valuation date. Over time, annual pension contributions will accumulate Plan assets equal to the AAL, and the UAAL will be eliminated. Thereafter, annual contributions equal to the normal cost will keep the Plan's assets and liabilities in balance. The UAAL is developed in Table VI.

**Table VI**

	<u>January 1, 2002</u>	<u>January 1, 2004</u>
Actuarial Accrued Liability	\$59,312,723	\$65,276,552
Actuarial Assets	<u>46,779,157</u>	<u>50,857,118</u>
Unfunded Actuarial Accrued Liability	\$12,533,566	\$14,419,434
Funded Status	78.9%	77.9%

## **Appropriations**

The pension appropriation for the upcoming fiscal years have been calculated in accordance with the requirements set forth in Section 22D of Chapter 32 of the Massachusetts General Laws. These amounts were calculated to comply with the June 30, 2028, full funding mandate for all accrued liabilities. The pension appropriation is the sum of the:

- Employer normal cost,
- Increasing amortization of the prior unfunded actuarial accrued liability by June 30, 2022  
\$ 14,419,434 over 18 years with 4.5 % increasing payments
- Interest adjustment for payments deposited at the beginning of the fiscal year.

The pension appropriation is shown in Table VII.

**Table VII**

	<u>January 1, 2002</u>	<u>January 1, 2004</u>
Normal cost	\$565,268	\$915,008
Amortization payment of the prior accrued liability	<u>874,747</u>	<u>1,081,743</u>
Total cost	\$1,440,015	\$1,996,751
% of Pay	8.6%	11.1%
Fiscal 2006 cost	\$1,653,000	\$2,193,087

### **Appropriation Forecast**

The following exhibit forecasts employer and employee contributions over the next 32 years under the adopted funding schedule.

Note that the forecast is based upon an "open group" method. This method assumes that sufficient employees will be hired each year to keep the number constant. The total payroll of the system is expected to increase 4.5% per year. The employee contribution rate is expected to increase to 10.5% by 2028 as members contributing base percentages 5%, 7%, and 8% are replaced by new members, whose base contribution is 9%. Payments are assumed to be made at the beginning of the year.

The employer total cost is expected to increase during the next 18 years until the unfunded liabilities are completely paid off, at which time only the normal cost will remain. The total cost represents 8.9% of payroll, increasing next year to 11.7%, decreasing to 9.9% by the time the unfunded liabilities are fully paid off, leaving only a normal cost of 3.3% thereafter. The decrease in the cost as a percentage of payroll is a result of the increase in member deductions.

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**Appropriation Forecast**  
**(amounts in thousands)**

Fiscal Year Ending	Employee Payroll*	Employee Contribution	Employer Normal Cost with Interest	Amortization Payments with Interest	Employer Total Cost with Interest	Employer Total Cost % of Payroll	Funded Ratio %**
2005	\$17,996	\$1,446	\$953	\$648	\$1,601	8.9	77.9
2006	18,806	1,532	975	1,218	2,193	11.7	78.5
2007	19,652	1,621	997	1,273	2,270	11.6	79.8
2008	20,536	1,716	1,019	1,330	2,349	11.4	81.0
2009	21,460	1,817	1,041	1,390	2,431	11.3	82.3
2010	22,426	1,922	1,063	1,453	2,515	11.2	83.6
2011	23,435	2,034	1,084	1,518	2,602	11.1	84.8
2012	24,490	2,152	1,106	1,586	2,692	11.0	86.1
2013	25,592	2,276	1,127	1,658	2,785	10.9	87.3
2014	26,744	2,407	1,148	1,732	2,880	10.8	88.5
2015	27,947	2,545	1,168	1,810	2,979	10.7	89.7
2016	29,205	2,691	1,188	1,892	3,080	10.5	91.0
2017	30,519	2,845	1,208	1,977	3,185	10.4	92.2
2018	31,892	3,007	1,227	2,066	3,292	10.3	93.5
2019	33,327	3,178	1,245	2,159	3,403	10.2	94.7
2020	34,827	3,358	1,262	2,256	3,518	10.1	96.0
2021	36,394	3,549	1,278	2,357	3,635	10.0	97.3
2022	38,032	3,749	1,293	2,463	3,756	9.9	98.7
2023	39,743	3,960	1,307	0	1,307	3.3	100.0
2024	41,532	4,183	1,319	0	1,319	3.2	100.0
2025	43,401	4,418	1,330	0	1,330	3.1	100.0
2026	45,354	4,665	1,340	0	1,340	3.0	100.0
2027	47,395	4,926	1,347	0	1,347	2.8	100.0
2028	49,528	5,200	1,352	0	1,352	2.7	100.0
2029	51,756	5,434	1,413	0	1,413	2.7	100.0
2030	54,085	5,679	1,477	0	1,477	2.7	100.0
2031	56,519	5,935	1,543	0	1,543	2.7	100.0
2032	59,063	6,202	1,613	0	1,613	2.7	100.0
2033	61,720	6,481	1,685	0	1,685	2.7	100.0
2034	64,498	6,772	1,761	0	1,761	2.7	100.0
2035	67,400	7,077	1,840	0	1,840	2.7	100.0
2036	70,433	7,395	1,923	0	1,923	2.7	100.0

\* Calendar basis

\*\* As of beginning of the Fiscal Year

**GAS No. 25 and GAS No. 27**

Effective for periods beginning after June 15, 1997, the Governmental Accounting Standards Board (GASB) requires the disclosure of pension related liabilities for public employer financial statements in accordance with Statements 25 and 27. These statements, which replace GASB Statement No. 5, must be adhered to by any public employee retirement system that follows Generally Accepted Accounting Principles (GAAP).

These disclosures are intended to establish a reporting framework that distinguishes between:

- current financial information about plan assets and financial activities,
- actuarially determined information from a long-term perspective,
- the funded status of the plan, and
- progress being made in accumulating sufficient assets to pay benefits when due.

Footnote disclosures required by GASB Statement No. 25 and 27 include a description of the plan, a summary of significant accounting policies, and information about contributions, legally required reserves, and investment concentrations. As a result of the oversight of the Public Employees Retirement Administration Commission (PERAC) and the conversion of unpaid contributions to pension related debt, the Net Pension Obligation (NPO) as required by Statement No. 27 will effectively always be equal to \$0. The required disclosure information is shown in Table VIII.

**Table VIII**

	<u>January 1, 2002</u>	<u>January 1, 2004</u>
(1) Actuarial Accrued Liability	\$59,312,723	\$65,276,552
(2) Actuarial Value of Assets	<u>46,779,157</u>	<u>50,857,118</u>
(3) Unfunded Actuarial Accrued Liability	12,533,566	14,419,434
(4) Funded Ratio (2)/(1)	78.9%	77.9%
(5) Covered Payroll	\$16,773,825	\$17,995,844
(6) UAAL as a percentage of payroll: (3)/(5)	74.7%	80.1%
(7) Annual Required Contribution (ARC)	\$1,501,216	\$1,601,000
(8) Net Pension Obligation	\$0	\$0

**PERAC Annual Statement**  
**APPENDIX PAGE 3**  
**ACTUARIAL VALUATION AND ASSUMPTIONS**

The most recent actuarial valuation of the System was prepared by Mellon Human Resources & Investor Solutions as of January 1, 2004.

The normal cost for employees on that date was:	\$1,446,304	8.0% of pay
The normal cost for the employer was:	815,008	4.5% of pay
 The actuarial liability for active members was:		 \$36,686,777
The actuarial liability for retired members was:		28,589,775
Total actuarial accrued liability:		65,276,552
System assets as of that date:		50,857,118
Unfunded actuarial accrued liability:		\$14,419,434
 The ratio of system's assets to total actuarial liability was		 77.9%

The principal actuarial assumptions used in the valuation are as follows:

Investment Return:	8.5%
Rate of Salary Increase:	5.5%

**SCHEDULE OF FUNDING PROGRESS**

Actuarial Valuation Date	Actuarial Value of Assets	Actuarial Accrued Liability	Unfunded Actuarial Accrued Liability	Funded Ratio	Covered Payroll	UAAL as a percent of Covered Payroll
	(a)	(b)	(b-a)	(a/b)	(c)	(b-a)/c
01/01/04	\$50,857,118	\$65,276,552	\$14,419,434	77.9%	\$17,995,844	80.1%
01/01/02	46,779,157	59,312,723	12,533,566	78.9%	16,773,825	74.7%
01/01/00	48,071,979	49,486,969	1,414,990	97.1%	14,064,649	10.1%
01/01/99	39,201,694	46,718,881	7,517,187	83.9%	13,196,123	57.0%
01/01/97	26,399,577	36,258,355	9,858,778	72.8%	11,635,681	84.7%

Attach Copy of Current Approved Funding Schedule

## **EXHIBITS**

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## Age/Service Distribution with Salary as of January 1, 2004

Attained Age	Average Salary	<5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
< 20	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0
20-24	23	0	0	0	0	0	0	0	0	0	23
	16,496	0	0	0	0	0	0	0	0	0	16,496
25-29	47	2	0	0	0	0	0	0	0	0	49
	23,700	41,160	0	0	0	0	0	0	0	0	24,412
30-34	28	15	2	0	0	0	0	0	0	0	45
	27,282	40,910	43,084	0	0	0	0	0	0	0	32,527
35-39	30	14	6	4	0	0	0	0	0	0	54
	21,482	42,224	55,909	61,470	0	0	0	0	0	0	33,647
40-44	64	9	4	16	6	0	0	0	0	0	99
	20,151	29,217	49,841	47,361	49,429	0	0	0	0	0	28,347
45-49	64	15	6	8	8	3	2	0	0	0	106
	17,182	26,724	32,919	52,794	53,031	71,751	51,113	0	0	0	27,001
50-54	29	20	9	10	10	11	7	0	0	0	96
	22,816	26,912	41,700	42,520	53,670	53,737	56,347	0	0	0	36,694
55-59	8	9	5	17	7	7	9	2	0	0	64
	21,504	27,704	33,890	39,080	40,428	56,801	61,964	38,881	0	0	40,175
60-64	13	2	6	5	1	3	0	3	0	0	33
	26,580	24,073	38,978	30,787	61,115	30,907	0	63,114	0	0	34,081
65-69	0	1	1	0	2	0	1	0	0	0	5
	0	13,224	32,432	0	48,398	0	47,202	0	0	0	37,931
70+	1	0	0	0	0	1	1	1	0	0	4
	11,845	0	0	0	0	6,902	36,595	7,600	0	0	15,736
Total Employees	307	87	39	60	34	25	20	6	-	-	578
Average Salary	21,114	32,182	41,783	44,492	49,954	52,144	56,906	45,784	-	-	31,135

## Retiree Distribution as of January 1, 2004

Attained Age	Number of Employees			Total Payments		
	Male	Female	Total	Male	Female	Total
< 20	0	0	0	0	0	0
20-24	0	0	0	0	0	0
25-29	0	0	0	0	0	0
30-34	0	0	0	0	0	0
35-39	0	0	0	0	0	0
40-44	1	0	1	2,352	0	2,352
45-49	0	1	1	0	15,955	15,955
50-54	0	1	1	0	3,885	3,885
55-59	9	1	10	321,444	3,767	325,211
60-64	5	12	17	134,607	109,727	244,334
65-69	8	12	20	236,063	182,448	418,510
70-74	18	25	43	361,054	263,112	624,166
75-79	18	23	41	372,616	179,862	552,478
80-84	12	22	34	202,759	159,916	362,676
85-89	9	12	21	108,902	54,690	163,592
90-94	3	4	7	55,267	31,239	86,505
95-99	0	1	1	0	1,242	1,242
Total	83	114	197	1,795,064	1,005,844	2,800,908
Average (Age/Payment)	74.2	75.8	75.1	21,627	8,823	14,218
Frequency Percent	42.1	57.9	100	64.1	35.9	100

## Disabled Retiree Distribution as of January 1, 2004

Attained Age	Number of Employees			Total Payments		
	Male	Female	Total	Male	Female	Total
< 20	0	0	0	0	0	0
20-24	0	0	0	0	0	0
25-29	0	0	0	0	0	0
30-34	0	0	0	0	0	0
35-39	0	0	0	0	0	0
40-44	0	0	0	0	0	0
45-49	3	0	3	64,194	0	64,194
50-54	4	0	4	114,197	0	114,197
55-59	9	0	9	208,624	0	208,624
60-64	3	0	3	73,592	0	73,592
65-69	3	0	3	81,524	0	81,524
70-74	2	0	2	37,761	0	37,761
75-79	4	0	4	71,160	0	71,160
80-84	2	0	2	41,949	0	41,949
85-89	0	0	0	0	0	0
90-94	0	0	0	0	0	0
95-99	0	0	0	0	0	0
Total	30	0	30	693,002	0	693,002
Average (Age/Payment)	62.8	0	62.8	23,100	0	23,100
Frequency Percent	100	0	100	100	0	100

**EXHIBIT 4 - CASHFLOW FORECAST:**

The following is a 30 year forecast of benefit payments net of state reimbursable COLA payments, Contribution Income and Investment Returns.

Plan Year Ending	Benefit Payments	Employee Contributions	Employer Contributions	Investment Returns	Net change in plan assets
2004	\$3,635	\$1,446	\$1,601	\$4,253	\$3,665
2005	3,832	1,532	2,193	4,583	4,476
2006	4,071	1,621	2,270	4,959	4,779
2007	4,314	1,716	2,349	5,361	5,112
2008	4,609	1,817	2,431	5,790	5,429
2009	4,908	1,922	2,515	6,246	5,775
2010	5,208	2,034	2,602	6,731	6,159
2011	5,523	2,152	2,692	7,249	6,570
2012	5,913	2,276	2,785	7,799	6,947
2013	6,314	2,407	2,880	8,381	7,354
2014	6,710	2,545	2,979	8,998	7,812
2015	7,140	2,691	3,080	9,653	8,284
2016	7,568	2,845	3,185	10,349	8,811
2017	8,036	3,007	3,292	11,088	9,351
2018	8,522	3,178	3,403	11,874	9,933
2019	8,950	3,358	3,518	12,711	10,637
2020	9,396	3,549	3,635	13,608	11,396
2021	9,869	3,749	3,756	14,570	12,206
2022	10,291	3,960	1,307	15,495	10,471
2023	10,712	4,183	1,319	16,376	11,166
2024	11,173	4,418	1,330	17,315	11,890
2025	11,641	4,665	1,340	18,316	12,680
2026	12,082	4,926	1,347	19,386	13,577
2027	12,500	5,200	1,352	20,533	14,585
2028	12,862	5,434	1,413	21,767	15,752
2029	13,166	5,679	1,477	23,103	17,093
2030	13,423	5,935	1,543	24,555	18,610
2031	13,664	6,202	1,613	26,137	20,288
2032	13,852	6,481	1,685	27,864	22,178
2033	14,316	6,772	1,761	29,741	23,958

amounts in thousands

## **EXHIBIT 5 – SUMMARY OF PLAN PROVISIONS:**

This summary is prepared in accordance with Chapter 32 as of January 1, 2004, and does not take into account any subsequent changes.

### **1. Administration**

Each of the 107 contributory retirement systems for public employees for the Commonwealth of Massachusetts are guided by the applicable provisions of Chapter 32 of the Massachusetts General Laws and other applicable statutes. Although these boards operate semi-independently, there is a uniform set of rules governing benefits, eligibility, contributions, financing, and accounting.

### **2. Participation**

Participation is mandatory for all full-time employees whose employment commences prior to age 65. Eligibility with respect to part-time, professional, temporary, or intermittent employment is governed by the local board. Membership is optional for certain elected officials, State officials appointed by the Governor, and certain hospital interns.

There are four classes of membership as follows:

- (i) Group 1: Most general employees in State and local government
- (ii) Group 2: Certain specified hazardous duty positions
- (iii) Group 3: State police officers and inspectors
- (iv) Group 4: Local police officers, firefighters, and designated employees of the municipal light department.

For members in more than one group, participation will be proportional.

### 3. **Salary**

Salary is defined as gross regular compensation. Salary does not include bonuses, overtime, severance pay, unused sick leave credit, or other similar compensation.

### 4. **Member Contributions**

Member contributions vary depending upon date hired as follows:

<b><u>Date of Hire</u></b>	<b><u>Member Contribution Rate</u></b>
Prior to 1975	5.0% of Salary
1975 to 1983	7.0% of Salary
1984 to 1996	8.0% of Salary
1996 and Later plus	9.0% of Salary
1979 and Later	2.0% of Salary in excess of \$30,000

### 5. **Average Salary**

Average salary is used to determine a participant's benefit. It is defined as the average salary during the three consecutive-year period that produces the highest average. (Alternatively, if a greater amount results, it is the average rate of salary earned during the period or periods, whether or not consecutive, that constitutes the last three years preceding retirement.)

### 6. **Creditable Service**

In general, creditable service is awarded during the period in which a member contributes to the retirement system.

## **7. Service Retirement**

### **a. Eligibility:**

For an employee to be eligible for service retirement (also referred to as superannuation), one of the following conditions must be met:

- (i) completion of 20 years of service
- (ii) for an employee hired prior to January 1, 1978, attainment of age 55 as an active member
- (iii) for an employee hired on or after January 1, 1978, attainment of age 55 as an active member and completion of ten years of service
- (iv) if an employee is a State Police officer (Group 3), attainment of age 50

b. Benefit Amount:

The retirement allowance is determined as a product of the participant's Benefit Rate times Average Salary times Creditable Service, where Benefit Rate is determined from the following table:

<u>Age at Retirement</u>	<u>Percentage of Average Salary</u>		
	<u>Group 1</u>	<u>Group 2</u>	<u>Group 4</u>
65 or Over	.025	.025	.025
64	.024	.025	.025
63	.023	.025	.025
62	.022	.025	.025
61	.021	.025	.025
60	.020	.025	.025
59	.019	.024	.025
58	.018	.023	.025
57	.017	.022	.025
56	.016	.021	.025
55	.015	.020	.025
54	.014	.014	.024
53	.013	.013	.023
52	.012	.012	.022
51	.011	.011	.021
50	.010	.010	.020
49	.009	.009	.019
48	.008	.008	.018
47	.007	.007	.017
46	.006	.006	.016
45	.005	.005	.015
44	.004	.004	.004
43	.003	.003	.003
42	.002	.002	.002
41	.001	.001	.001

For Group 3 (State Police), the benefit is 50% of the participant's final year's rate of regular salary, plus an additional 1% for each year of service in excess of 20 years. In addition, for veterans (all groups) there is an additional benefit of \$15 per year for each year of service, up to a maximum of 20 years of service.

## **8. Deferred Vested Retirement**

### **a. Eligibility:**

A participant who has completed ten or more years of creditable service is eligible for a deferred vested retirement benefit. If termination is involuntary, the participant is vested after six years.

### **b. Benefit Amount:**

The participant's accrued benefit is payable commencing at age 55, or may be deferred until later at the employee's option.

### **c. Refund of Contributions:**

In lieu of the deferred pension benefit, a member may elect to receive a refund of their accumulated contributions. Members with ten or more years of service are entitled to 100% of the credited interest on their contributions. Members with five to ten years of service are entitled to 50% of the credited interest on their contributions. No credited interest is provided for members with less than five years of service.

## **9. Accidental Disability**

### **a. Eligibility:**

Participants are eligible for an accidental disability benefit, regardless of service or age, if they become permanently and totally incapacitated for further duty as a result of personal injury sustained while in the performance of duties.

### **b. Benefit Amount:**

The accidental disability amount is 72% of annual salary plus \$450 per year for each child plus an additional annuity based upon accumulated Member Contributions with credited interest.

## **10. Ordinary Disability**

### **a. Eligibility:**

An ordinary disability occurs when a member becomes permanently and totally disabled due to sickness or injury that is not job related. In order to be eligible for an ordinary disability benefit, a member must have ten years of service (and be less than age 55).

### **b. Benefit Amount:**

The ordinary disability amount is equal to the accrued retirement benefit as if the member were age 55. If the member was a veteran, the benefit is 50% of the member's final rate of Salary during the preceding 12 months, plus an annuity based upon accumulated Member Contributions plus credited interest. If the participant is over age 55, he will receive not less than the superannuation allowance to which he is entitled.

## **11. Survivor Benefits**

### **a. Occupational Death:**

The survivors of a member who dies due to an occupational injury will be entitled to a lump sum return of contributions plus a pension benefit equal to 72% of the participant's annual Salary.

### **b. Non-Occupational Death:**

Upon the death of a member other than due to an occupational injury, the designated beneficiary will be entitled to a retirement benefit as if Option C had been elected with a minimum of \$250 per month to the surviving spouse, plus \$120 for the first child, plus \$90 for each additional child. If no beneficiary is designated and if the employee worked two years, and is married at least one year, the spouse may elect benefits. If there is no designated beneficiary or surviving spouse, then member contributions are returned. If there are dependent children but no surviving spouse, they may elect minimum survivor benefits of \$250 per month plus \$120 for the first child and \$90 for each additional child.

c. Refund of Contributions:

Upon the death of a member not entitled to survivor benefits, the beneficiary is entitled to a refund of all member contributions with interest.

**12. Cost-of-Living Increases**

In accordance with the adoption of Chapter 17 of the Acts of 1997, the granting of a cost-of-living adjustment will be determined by an annual vote by the Retirement Board. The amount of increase will be based upon the Consumer Price Index, limited to a maximum of 3.0%, beginning on July 1. All retirees, disabled retirees, and beneficiaries who have been receiving benefits payments for at least one year as of July 1 are eligible for the adjustment. The maximum amount of pension benefit subject to a COLA is \$12,000. All COLAs granted to members after 1981 and prior to July 1, 1998 are deemed to be an obligation of the State and are not the liability of the Retirement System.

**13. Postretirement Death Benefits**

Any benefits following the death of a member after retirement are based upon the form of benefit the participant elected at the time of retirement. There are three available forms as follows:

- (i) Option A – Life annuity
- (ii) Option B – Life annuity with death benefit equal to excess of member contributions plus credited interest to retirement over annuity benefit paid to member
- (iii) Option C – Life annuity with 66-2/3% of benefit continued after death of member to designated joint annuitant

## EXHIBIT 6 – ACTUARIAL METHODS AND ASSUMPTIONS:

The actuarial cost method, factors, and assumptions used in determining cost estimates are presented below.

### 1. **Member Data**

The member data used in the determination of cost estimates consist of pertinent information with respect to the active, inactive, retired, and disabled members of the employer as supplied by the employer to the actuary.

### 2. **Valuation Date**

January 1, 2004.

### 3. **Actuarial Cost Method**

The costs of the Plan have been determined in accordance with the individual entry age normal actuarial cost method.

### 4. **Rate of Investment Return**

It is assumed that the assets of the fund will accumulate at a compound annual rate of 8.5% per annum.

### 5. **Salary Scale**

It is assumed that salaries including longevity will increase at a rate of 5.5% per year.

### 6. **Cost-of-Living Increases**

Cost-of-living increases have been assumed to be 3.0% of the lesser of the pension amount and \$12,000 per year.

### 7. **Value of Investments**

Assets held by the fund are valued at market value as reported by the Public Employees'

Retirement Administration Commission (PERAC). The actuarial value of assets is determined using a five-year smoothing of unrealized gains and losses.

**8. Annual Rate of Withdrawal Prior to Retirement**

Based on an analysis of experience, the assumed annual rates of withdrawal may best be illustrated by the following rates at the following ages:

<u>Service</u>	<u>General Employees</u>	<u>Police and Fire Employees</u>
0	0.1500	0.0150
10	0.0540	0.0150
20	0.0200	0.0000
30	0.0000	0.0000

**9. Annual Rate of Mortality**

It is assumed that both preretirement and postretirement mortality are represented by the RP-2000 Mortality Table for males and females. Mortality for disabled members is represented by the RP-2000 Mortality Table set forward two years for all disabled members.

**10. Service Retirement**

Based on an analysis of experience, the assumed annual retirement rates are illustrated at the following ages:

<b><u>Age</u></b>	<b><u>Male General Employees</u></b>	<b><u>Female General Employees</u></b>	<b><u>Male and Female Police and Fire Employees</u></b>
50	0.0100	0.0150	0.02000
51	0.0100	0.0150	0.02000
52	0.0100	0.0200	0.02000
53	0.0100	0.0250	0.05000
54	0.0200	0.0250	0.07500
55	0.0200	0.0550	0.15000
56	0.0250	0.0650	0.10000
57	0.0250	0.0650	0.10000
58	0.0500	0.0650	0.10000
59	0.0650	0.0650	0.15000
60	0.1200	0.0500	0.20000
61	0.2000	0.1300	0.20000
62	0.3000	0.1500	0.25000
63	0.2500	0.1250	0.25000
64	0.2200	0.1800	0.30000
65	0.4000	0.1500	1.00000
66	0.2500	0.2000	1.00000
67	0.2500	0.2000	1.00000
68	0.3000	0.2500	1.00000
69	0.3000	0.2000	1.00000
70	1.0000	1.0000	1.00000

**11. Annual Rate of Disability Prior to Retirement**

Based on an analysis of experience, the assumed annual rates of disability may best be illustrated by the following probabilities at the following ages:

<b><u>Attained Age</u></b>	<b><u>General Employees</u></b>	<b><u>Police and Fire Employees</u></b>
20	0.0001	0.0001
30	0.0003	0.0003
40	0.0010	0.0030
50	0.0019	0.0125

In addition, it is assumed for the general employees that 45% of all disabilities are ordinary (55% are service connected). For police and fire employees, 10% of all disabilities are assumed to be ordinary (90% are service connected).

**12. Family Composition**

It is assumed that 80% of all members will be survived by a spouse and that females (males) are three years younger (older) than members.

**13. Administrative Expenses**

The normal cost is increased by an amount equal to the anticipated administrative expenses for the upcoming fiscal year. The amount for fiscal year 2004 is \$100,000 and is anticipated to increase at 4.5% per year.

## EXHIBIT 7 – GLOSSARY OF TERMS:

This glossary summarizes the technical terms contained in this report.

### 1. **Actuarial Accrued Liability**

That portion of the Actuarial Present Value of plan benefits that is not provided for by future employer Normal Costs or employee contributions.

### 2. **Actuarial Assumptions**

Assumptions as to the occurrence of future events affecting the Retirement System such as:

- Rates of investment returns
- Increases in a member's salary
- Inflation
- The probability of mortality, turnover, disablement
- Retirement at each age and other relevant items

### 3. **Actuarial Cost Method**

A procedure for allocating the Actuarial Present Value of pension plan benefits between Normal Cost and Actuarial Accrued Liability.

### 4. **Actuarial Present Value**

The single sum amount required at the valuation date that is required to provide for anticipated future events based upon the terms of the plan and the Actuarial Assumptions.

### 5. **Forecast**

A projection of future benefit payments or contribution requirements based upon the terms of the plan, the current asset amounts, the Actuarial Assumptions, and additional assumptions as to the replacement of terminating employees with new employees.

**6. Normal Cost**

That portion of the Actuarial Present Value of future benefits that is assigned to the current year.

**7. Unfunded Actuarial Accrued Liability**

That portion of the Actuarial Accrued Liability that is not provided for by current actuarial value of assets.

**8. Valuation Method**

The method used to divide the cost of future benefits among the Actuarial Accrued Liability, the current year's Normal Costs, and future years' Normal Costs. The resulting current funding requirement is then determined as the current year's Normal Cost plus the payment necessary to amortize the Unfunded Actuarial Liability.

**9. Vested Liability**

That portion of the Actuarial Present Value of Accrued Benefits that a member would be entitled to if the member terminated employment with the employer as of the valuation date.

## **CERTIFICATION:**

This report fairly represents the actuarial position of the Town of Shrewsbury Contributory Retirement System contributing as of January 1, 2004, in accordance with generally accepted actuarial principles applied consistently with the preceding valuation. In our opinion, the actuarial assumptions used to compute actuarial accrued liability and normal cost is reasonably related to plan experience and to reasonable expectations, and represents our best estimate of anticipated plan experience.

Mellon Human Resources and Investor Solutions

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Daniel W. Sherman, ASA, MAAA  
Enrolled Actuary No. 99-4086

June 2004

## **BREAKOUTS**

## Breakouts

	<u>Total</u>	<u>All Others</u>	<u>Housing</u>	<u>Light</u>	<u>Cable</u>	<u>Water</u>	<u>Sewer</u>	<u>Custodians</u>	<u>School Employees</u>
(1) Participants									
(a) Actives	578	179	11	38	18	11	5	30	286
(b) Inactives	156	16	2	5	2	0	0	4	127
(c) Retirees	197	99	3	16	2	9	2	16	50
(e) Disabled Retirees	<u>30</u>	<u>24</u>	<u>0</u>	<u>2</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>3</u>	<u>0</u>
(f) Total	961	318	16	61	22	21	7	53	463
(2) Payroll of Active Participants	\$17,995,844	\$7,934,198	\$412,133	\$2,146,533	\$775,923	\$415,444	\$216,513	\$1,053,895	\$5,041,205
(3) Normal Cost									
(a) Total Normal Cost	2,261,312	1,064,020	49,203	272,058	76,613	45,671	23,470	131,050	599,227
(b) Expected Employee Contributions	1,446,304	632,203	32,993	158,421	67,010	33,600	17,708	84,329	420,040
(c) Administrative Expenses	<u>100,000</u>	<u>47,053</u>	<u>2,176</u>	<u>12,031</u>	<u>3,388</u>	<u>2,020</u>	<u>1,038</u>	<u>5,795</u>	<u>26,499</u>
(d) Net Employer Normal Cost (a) - (b) + (c)	915,008	478,870	18,386	125,668	12,991	14,091	6,800	52,516	205,686
(4) Actuarial Accrued Liability	65,276,552	39,489,734	1,197,813	10,588,241	1,062,545	1,716,179	598,271	4,310,027	6,313,742
(5) Assets*	<u>50,857,118</u>	<u>30,179,788</u>	<u>899,592</u>	<u>9,161,896</u>	<u>898,865</u>	<u>1,288,900</u>	<u>449,319</u>	<u>3,236,955</u>	<u>4,741,803</u>
(6) Unfunded Actuarial Accrued Liability (4) - (5)	14,419,434	9,309,946	298,221	1,426,345	163,680	427,279	148,952	1,073,072	1,571,939
(7) Amortizations*	1,169,387	755,018	24,185	115,674	13,274	34,651	12,080	87,024	127,481
(8) Total Required Employer Contributions	2,105,431	1,244,766	42,998	244,189	26,612	49,078	19,044	140,749	337,995
(9) Fiscal 2005 Cost**	\$1,601,000	\$1,258,487	\$32,175	\$197,775	\$54,853	\$38,521	\$19,189	-	-
(10) Fiscal 2006 Cost**	\$2,193,087	\$1,296,590	\$44,788	\$254,356	\$27,720	\$51,122	\$19,836	\$146,609	\$352,066
(11) Percentage of total	100.00%	59.12%	2.04%	11.60%	1.26%	2.33%	0.90%	6.69%	16.05%

\* Allocation is based on the ratio of the Unfunded Actuarial Accrued Liability

\*\* Starting in Fiscal 2006, the allocation of appropriations was modified to from a purely pay based formula to one based on unit Normal Costs and Accrued Liabilities.